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Report of the ISSLR conference working session on lessons learned for setting agendas for Saline Lakes Research

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ABSTRACT

Minutes of a session of the joint meeting of the 10th International Conference on Salt Lake Research & FRIENDS of Great Salt Lake Issues Forum summarize and categorize approximately 150 comments made by 80 participants on lessons learned for setting research agendas for saline lakes. Successful research agendas for saline lakes appear to have three components: strong science, proactive communication, and sufficient support. This paper summarizes diverse perspectives expressed during the working session.

INTRODUCTION

On May 15, 2008, eighty attendees of the 10th ISSLR conference shared perspectives concerning the reasons why some saline lakes research programs succeed and others fail. The session was prompted by a desire to learn from each other and by the immediate need of the State of Utah for guidance to prioritize research needs for Great Salt Lake. The ISSLR working session did not focus on the relative merit of specific research objectives but focused on lessons learned on how to set research agendas. This short report does not attempt to analyze participants' perspectives or to evaluate the efficacy of this working session compared to attempts of similar nature.

After brief introductory remarks exhorting participants to set aside their personal projects and to think as decision makers, work-session attendees divided into groups of 2-8 people, designated a scribe for their group, and brainstormed three questions: (1) what has worked, (2) what has not worked, and (3) what advice they had with respect to setting research priorities for saline lakes. After an hour of lively discussion, attendees reconvened for a 20 minute committee of the whole and scribes reported group insights. The following compendium of comments includes inconsistent, even contradictory, comments. It is intended as shared, wisdom from a diverse group of individual researchers and managers who have observed successes and failures of science and public policy. It does not represent consensus of the working session participants, the conference leaders, the ISSLR, or even the author's views. Comments from scribes were abbreviated and organized in three general categories: comments with respect the scientific substance of research; comments with respect to communication of research needs and findings; and comments with respect to obtaining sufficient funding for research programs. The scribes attempted to capture the substance of participant comments in the following listings, but both scribes and the author recognize they may not have fully communicated subtleties of participant insights.

DISCUSSIONS

Context: Every saline lake is unique. Different lakes require different research approaches. Research related to different saline lakes is at different stages. Long- and short-term research goals should be framed for the physical conditions, socioeconomic conditions, and management needs of a specific lake. However, saline lakes share sufficient commonalities that colleagues can learn from successes of well-funded, science-driven programs, and perhaps avoid pitfalls of unsuccessful research programs. Participants recognized and did not enumerate the variety of values and variety of threats facing saline lakes.

What has worked to successfully achieve the scientific objectives of research programs: establish long-term research goals; develop a clear picture of the hydrogeomorphic conditions of a system; understand mass balances (quantity and quality); know where water comes from, where and how it is stored, and where it goes; take time to identify key substantive issues and assure that research addresses the highest priority issues; invest in baseline monitoring because monitoring is essential for analyses of change; plan long-term integrated land management of entire catchment areas; attempt to understand the system as a whole; encourage collaborative cross-disciplinary studies; encourage expert-driven full-lake oriented studies that produce general knowledge of a saline lake; and conduct retrospective analyses to evaluate research quality and applicability.

What has worked to facilitate communication: hold coordination meetings of technical researchers; seek public participation; consult with decision makers and diverse stakeholders; assure proper diagnosis of stakeholders; disseminate research and policy results to the public; seek multidisciplinary input through workshops and meetings to apply scientific perspectives to technical, political, and

social challenges; develop bottom-up approaches with input from front-line managers and local researchers; use web-sites to share research and news; apply geospatial tools to store, display, interpret, and communicate results of scientific studies to wide ranges of scientists, stakeholders, and managers; use landscape analysis as a way to transfer knowledge of hydrogeomorphic settings; and apply technically-based and agreed-upon methods and communicate technical results.

What has worked to successfully obtain financial and societal support: take advantage of eco-disasters, make positive use of crises; fund applied studies that produce general knowledge of a saline lake; litigate or threaten litigation such as evocation of the public trust doctrine; have a point-agency whose mission is the lake and all its stakeholders; find, educate and nurture powerful "champions" who support the research; and address "low hanging fruit" meaning make early easily-attained progress on issues of immediate interest to stakeholders.

What has undermined achieving the scientific objectives of saline lake research: not coordinating efforts; setting too many top priorities (it's the same as having no priorities); not sufficiently planning or allocating sufficient resources or time to do the work; failing to manage expectations of scientists, managers and stakeholders; not acting because of overwhelming needs; reacting to, rather than in anticipation of crises; following research agendas torqued by industry or environmentalist pressures; failing to work across political jurisdictions for multi-jurisdictional closed-basin systems; competing with research for fresh water systems; not appreciating the local and global role of saline systems such as saline wetlands; trying to do too much with too little; cutting corners; and skipping peer review.

What has undermined successful communication of research on saline lakes: use of jargon that obfuscates science and derails decision makers; use of different units in diverse languages to describe saline lake characteristics, such as salinity (i.e., use of TDS, ppt, percent, and specific gravity); not having standard methods for working in saline lakes; and working in an environment where trust is lacking.

What has undermined financial and societal support for research on saline lakes: using top-down approaches to set priorities; depending on local community support when the understanding of a lake is limited; relying on support from an unsupportive department of government with potentially different mandates such as an agency dedicated solely to extractive resources, or an agency with higher priorities, or an agency too small to have political clout; receiving unbalanced lobbying efforts; and making decisions about a lake on information so grossly inadequate that major consequences are not anticipated.

Specific advice for successfully achieving scientific objectives of saline lake research: establish / continue baseline monitoring; analyze data sets and drivers to anticipate future impacts and research needs; prioritize topical research based on human health, ecosystem health, and economic impacts; recognize how scale affects research definition, plans, and approaches; target potential for early successes to show payback for investment of public funds; fund ecosystem initiatives appreciating in advance their magnitude and that they require long-term commitment; encourage collaborative, cross-disciplinary research; take advantage of the relative simplicity of saline lake ecosystems; understand closed-basin dynamics; and focus locally and think globally, meaning recognize how each system is unique but research is instructive beyond its borders.

Specific advice for successful communication of scientific research on saline lake and for establishing a strong funding base with political support: define stakeholders for specific projects; understand and address local stakeholders' issues and questions; involve stakeholders meaningfully in two-way, not-one way, communication; meet early and meet often to share information among scientific researchers; require publication and shared research results; require efficient allocation of research funds tied to ecosystem and other indicators; understand and address local stakeholder issues and questions; quantify and widely tout the economic, social, and environmental values of the lake; recognize the vulnerabilities of a lake and protect it; quantify the global as well as local value of the saline systems; counter perceptions of worthless, dead systems with scientific and economic examples; be alert for opportunities for eco-disaster tourism; harness the energy of crises to gain advocacy; build constituencies; identify common enemies; and forge ahead.

SUMMARY

From the organizers' perspective, the session was successful. It encouraged shared knowledge such as P. Coleman's web link Methods Manual for Salt Lake Studies (http://en.wikibooks.org/wiki/Methods_Manual_for_Salt_Lake_Studies). It directly impacted the allocation and focus of State of Utah 2008–2009 discretionary research funds. As expected, Great Salt Lake Tech team chose to invest most of the recently appropriated funding for expansion and upgrades of baseline monitoring. However, largely in response to working session coaching

to invest some funds in high-profile research with promise for rapid results, it designated $100000 for short-term, “hot topic” research to be identified by stakeholders.

The session highlighted the opportunity of international conferences for sharing ideas on mechanisms for furthering research in addition to their usual role of sharing research accomplishments. The session was boisterous and provocative. Scribes recorded approximately 150 comments. The comments divided about equally in four categories: (1) specific needs of specific lake systems (not itemized), (2) proactive communication of research needs and results, (3) ways to secure funding, and (4) approaches to strong science and quality control. There was no consensus. However, participants suggested that a panel of experts, such as a committee of the National Research Council, might develop a global agenda, meaning a blue print or working plan including schedules that could serve as a generic model for approaching saline lake research. Although discussion was wide-ranging and opinions were diverse, all agreed that lack of monitoring and research has been detrimental to effective management of saline lakes and that investment in understanding saline systems is especially needed with increased societal demand for water and expected changes in climate.

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Spiral Jetty from atop Rozel Point, in mid-April 2005 by Soren.harward. Wikimedia Commons at en.wikipedia.org. Accessed February 2009.